What is claimed is:

1. An olanzapine salt made by reacting olanzapine with an organic or inorganic acid in a crystallization solvent, wherein the form has an aqueous solubility of approximately 5 micrograms/mL to approximately 100 mg/mL.

2. The olanzapine salt of claim 1, comprising an olanzapine fumarate salt that is crystallized in a crystallization solvent comprising methanol.

3. The olanzapine salt of claim 1, comprising an olanzapine maleate salt that is crystallized in a crystallization solvent comprising THF.

4. The olanzapine salt of claim 1, comprising an olanzapine malonate salt that is crystallized in a crystallization solvent comprising THF.

5. An olanzapine salt comprising olanzapine fumarate.

6. The olanzapine salt of claim 5, wherein:

(a) the salt is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:
   (i) said X-ray diffraction pattern comprises peaks at 9.49, 13.99, and 15.83 degrees;
   (ii) said X-ray diffraction pattern comprises peaks at 12.71, 17.13, and 19.67 degrees;
   (iii)said X-ray diffraction pattern comprises peaks at 21.43, 22.29, and 22.99 degrees;
   (iv)said X-ray diffraction pattern comprises a peak at 9.49 degrees;
   (v) said X-ray diffraction pattern comprises peaks at 9.49 and 13.99 degrees; or
   (vi)said X-ray diffraction pattern comprises peaks at 15.83 and 22.29 degrees; or

(b) the salt is characterized by a DSC endothermic transition at about 238 degrees C.

7. The olanzapine salt of claim 5, wherein the form is crystallized in a crystallization solvent comprising methanol.

8. An olanzapine salt comprising olanzapine maleate.

9. The olanzapine salt of claim 8, wherein:

(a) the salt is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:

(i) said X-ray diffraction pattern comprises peaks at 5.57, 12.95, and 16.79 degrees;

(ii) said X-ray diffraction pattern comprises peaks at 11.97, 19.25, and 21.11 degrees;

(iii)said X-ray diffraction pattern comprises peaks at 5.57, 19.25, and 22.23 degrees;

(iv)said X-ray diffraction pattern comprises a peak at 5.57 degrees;

(v)said X-ray diffraction pattern comprises peaks at 5.57 and 12.95 degrees; or

(vi)said X-ray diffraction pattern comprises peaks at 16.79 and 19.25 degrees; or

(b) the salt is characterized by a DSC endothermic transition at about 196 degrees C.

10. The olanzapine salt of claim 9, wherein the form is crystallized in a crystallization solvent comprising THF.

11. An olanzapine salt comprising olanzapine malonate.

12. The olanzapine salt of claim 11, wherein the salt is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:

(a) said X-ray diffraction pattern comprises peaks at 7.37, 9.45, and 12.41 degrees;

(b) said X-ray diffraction pattern comprises peaks at 14.83, 20.51, and 21.35 degrees;

(c) said X-ray diffraction pattern comprises peaks at 7.37, 17.71, and 23.19 degrees;

(d) said X-ray diffraction pattern comprises a peak at 7.37 degrees;

(e) said X-ray diffraction pattern comprises peaks at 9.45 and 12.95 degrees; or

(f) said X-ray diffraction pattern comprises peaks at 9.85 and 17.71 degrees.

13. The olanzapine salt of claim 12, wherein the form is crystallized in a crystallization solvent comprising THF.

14. An olanzapine solvate formed by the crystallization of olanzapine and either urea or a urea derivative in a crystallization solvent comprising an alcohol, wherein the solvate has an aqueous solubility of at least about 100 micrograms/mL.

15. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising one or more alcohols.

16. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising methanol.

17. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising ethanol.

18. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising isopropanol.

19. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising ethyl acetate.

20. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising acetone.

21. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising 1,2-dichloroethane.

22. The olanzapine solvate of claim 14, wherein the solvate is formed by the crystallization of olanzapine and urea in a crystallization solvent comprising THF.

23. An olanzapine solvate, wherein:

(a) the solvate is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:
  (i) said solvate is a methanol solvate and said X-ray diffraction pattern comprises peaks at 8.61, 16.45, and 18.85 degrees;
  (ii) said solvate is a methanol solvate and said X-ray diffraction pattern comprises peaks at 16.45, 19.97, and 23.09 degrees;
  (iii)said solvate is a methanol solvate and said X-ray diffraction pattern comprises peaks at 20.85, 22.05, and 24.73 degrees;
  (iv)said solvate is a methanol solvate and said X-ray diffraction pattern comprises a peak at 8.61 degrees;
  (v)said solvate is a methanol solvate and said X-ray diffraction pattern comprises peaks at 8.61 and 16.45 degrees; or
  (vi)said solvate is a methanol solvate and said X-ray diffraction pattern comprises peaks at 18.85 and 19.97 degrees;

(b) the solvate is a methanol solvate and is characterized by a DSC endothermic transition at about 141 degrees C;

(c) the solvate is a methanol solvate and is characterized by a DSC endothermic transition at about 196 degrees C;

(d) the solvate is a methanol solvate and is characterized by TGA with a weight loss of about 23 percent between about 130 and 150 degrees C; or

(e) the solvate is a methanol solvate and exhibits a single-crystal x-ray analysis with crystal parameters that are approximately equal to the following:

Crystal system, space group:	Monoclinic, P2(1)/c	
Unit cell dimensions	a = 10.1416(8) angstroms	alpha = 90 deg
	b = 12.2793(9) angstroms	beta =91.7860(10) deg
	c = 14.1147(11) angstroms	gamma = 90 deg
Volume:	1756.9(2) angstroms^3	
Z, Calculated density	4, 1.302 Mg/m^3	
R indices (all data)	R1 = 0.0465, wR2 = 0.1167.	

24. An olanzapine:nicotinamide co-crystal formed by the crystallization of olanzapine and nicotinamide in a crystallization solvent, wherein the co-crystal has an aqueous solubility of at least about 100 micrograms/mL.

25. The olanzapine:nicotinamide co-crystal of claim 24, wherein the co-crystal is formed by the crystallization of olanzapine and nicotinamide in a crystallization solvent comprising 1,2-dichloroethane.

26. The olanzapine:nicotinamide co-crystal of claim 24, wherein the co-crystal is formed by the crystallization of olanzapine and nicotinamide in a crystallization solvent comprising isopropyl acetate.

27. An olanzapine:nicotinamide co-crystal comprising olanzapine and nicotinamide.

28. The olanzapine:nicotinamide co-crystal of claim 27, wherein:

(a) said co-crystal is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:

(i) said X-ray diffraction pattern comprises peaks at 4.89, 8.65, and 17.17 degrees;

(ii) said X-ray diffraction pattern comprises peaks at 23.97, 24.61, and 25.57 degrees;

(iii)said X-ray diffraction pattern comprises peaks at 4.89, 17.17, and 25.57 degrees;

(iv)said X-ray diffraction pattern comprises a peak at 4.89 degrees;

(v)said X-ray diffraction pattern comprises peaks at 4.89 and 8.65 degrees; or

(vi)said X-ray diffraction pattern comprises peaks at 17.17 and 23.97 degrees; or

(b) said co-crystal is characterized by a DSC endothermic transition at about 126 degrees C.

29. The olanzapine:nicotinamide co-crystal of claim 27, wherein said co-crystal is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:

(a) said X-ray diffraction pattern comprises peaks at 8.65, 11.87, and 14.53 degrees;

(b) said X-ray diffraction pattern comprises peaks at 17.53, 18.09, and 23.89 degrees;

(c) said X-ray diffraction pattern comprises peaks at 8.65, 17.53, and 24.19 degrees;

(d) said X-ray diffraction pattern comprises a peak at 8.65 degrees;

(e) said X-ray diffraction pattern comprises peaks at 11.87 and 14.53 degrees; or

(f) said X-ray diffraction pattern comprises peaks at 18.09 and 23.89 degrees.

30. The olanzapine:nicotinamide co-crystal of claim 27, wherein:

(a) said co-crystal is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:

(i) said X-ray diffraction pattern comprises peaks at 6.43, 12.85, and 18.69 degrees;

(ii) said X-ray diffraction pattern comprises peaks at 9.55, 14.91, and 21.85 degrees;

(iii)said X-ray diffraction pattern comprises peaks at 6.43, 14.91, and 19.83 degrees;

(iv)said X-ray diffraction pattern comprises a peak at 6.43 degrees;

(v)said X-ray diffraction pattern comprises peaks at 12.85 and 18.69 degrees; or

(vi)said X-ray diffraction pattern comprises peaks at 6.43 and 21.85 degrees; or

(b) said co-crystal exhibits a single-crystal x-ray analysis with crystal parameters that are approximately equal to the following:

Wavelength:	0.71073 Å
Crystal system, space group:	Monoclinic, P21/c
Unit cell dimensions:	a = 14.0961(12)Å alpha = 90°
	b = 12.5984(10)Å beta=97.396(2)°
	c = 27.219(2)Å gamma = 90°
Volume:	4793.6(7) $Å^3$
Z, Calculated density;	4, 1.276 Mg/m^3
Reflections collected / unique:	24952 / 8457 [R(int) = 0.0882]
Goodness-of-fit on F^2:	1.018
Final R indices [I>2sigma(I)]:	R1 = 0.0676, wR2 = 0.1461
R indices (all data):	R1 = 0.1187, wR2 = 0.1687.

31. An olanzapine propylene glycol solvate formed by the crystallization of olanzapine and a glycol in a crystallization solvent, wherein the solvate has an aqueous solubility of at least about 100 micrograms/mL.

32. The olanzapine propylene glycol solvate of claim 31, wherein the solvate is formed by the crystallization of olanzapine and propylene glycol in a crystallization solvent comprising isopropyl acetate.

33. An olanzapine propylene glycol solvate comprising olanzapine and propylene glycol.

34. The olanzapine propylene glycol solvate of claim 33, wherein:

(a) said propylene glycol solvate is characterized by a powder X-ray diffraction pattern comprising peaks expressed in terms of 2-theta angles, wherein:

(i) said X-ray diffraction pattern comprises peaks at 8.39, 11.71, and 15.55 degrees;

(ii) said X-ray diffraction pattern comprises peaks at 13.95, 15.55, and 19.55 degrees;

(iii)said X-ray diffraction pattern comprises peaks at 14.45, 17.91, and 21.47 degrees;

(iv)said X-ray diffraction pattern comprises a peak at 8.39 degrees;

(v)said X-ray diffraction pattern comprises peaks at 8.39 and 21.47 degrees; or

(vi)said X-ray diffraction pattern comprises peaks at 11.71 and 15.55 degrees;

(b) said propylene glycol solvate is characterized by a DSC endothermic transition at about 93 degrees C;

(c) said propylene glycol solvate is characterized by TGA with a weight loss of about 18 percent between about room temperature and 110 degrees C; or

(d) said propylene glycol solvate exhibits a single-crystal x-ray analysis with crystal parameters that are approximately equal to the following:

Space Group	P2(1)/c	
	a = 10.4264(9)	alpha = 90 deg
	b = 13.3916(11)	beta = 95.503(2) deg
	c = 14.4424(12)	gamma = 90 deg
Volume	2007.2(3).	

35. An olanzapine salt formed by reacting olanzapine and a dicarboxylic acid in a heated crystallization solvent to form a reaction product, and thereafter cooling the reaction product to a temperature of between about 0° C to about 10° C over a period of about five to about fifteen hours to form the olanzapine salt, wherein the olanzapine salt has an aqueous solubility of between about 0.05 mg/ml to about 100 mg/ml.

36. An olanzapine salt formed by reacting olanzapine and a dicarboxylic acid in a heated crystallization solvent to form a reaction product, and thereafter cooling the reaction product to a temperature of between about 0° C to about 10° C over a period of less than one hour to form the olanzapine salt, wherein the olanzapine salt has an aqueous solubility of between about 0.05 mg/ml to about 100 mg/ml.

37. The olanzapine salt of claim 35, wherein the crystallization solvent prior to form formation further comprises a seed crystal comprising a salt formed by the reaction of olanzapine and the dicarboxylic acid.

38. The olanzapine salt of claim 35, wherein the dicarboxylic acid is in the form of either a substantially pure (R)(+) enantiomer; a substantially pure (R)(-) enantiomer; a substantially pure (S)(+) enantiomer; or a substantially pure (S)(-) enantiomer.

39. A pharmaceutical dosage form comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of an olanzapine solvate of claim 14.

40. A pharmaceutical dosage form comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of an olanzapine:nicotinamide co-crystal of claim 27.

41. A pharmaceutical dosage form comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of an olanzapine salt, solvate, or co-crystal of any one of claims 1-38.

42. A method of treatment comprising administering a therapeutically effective amount of a pharmaceutical dosage form of claim 41 to a patient suffering from psychosis.

43. A method of treatment comprising administering a therapeutically effective amount of a pharmaceutical dosage form of claim 41 to a patient suffering from a functional bowel disorder.

44. The method of claim 43, wherein the patient suffers from irritable bowel syndrome.